Amendments to the Claims

Claims 1-3 (canceled)

4.(previously amended) A process of making a storage device comprising:

forming a first electrode over a substrate;

forming a ferroelectric polymer structure over the substrate;

forming a first protective film over the ferroelectric polymer structure; and

forming a second electrode over the first protective film;

forming a second protective film over the first electrode, wherein forming a second protective film over the first electrode comprises:

forming a damascene structure in the substrate from the first electrode and the second protective film by a process selected from mechanical polishing, chemical-mechanical polishing, chemical etchback, and combinations thereof.

Claim 5 (canceled)

6.(previously amended) A process of making a storage device comprising:

forming a first electrode over a substrate;

forming a ferroelectric polymer structure over the substrate;

forming a protective film over the ferroelectric polymer structure; and

forming a second electrode over the protective film, wherein forming a ferroelectric polymer structure comprises:

forming a first ferroelectric polymer layer over the substrate;

forming a spin-on ferroelectric polymer layer over the first ferroelectric polymer layer; and

forming a second ferroelectric polymer layer over the spin-on ferroelectric polymer layer.

Claims 7-12 (canceled)

13.(previously amended) A memory comprising:

a first electrode disposed over a substrate;

a ferroelectric polymer structure disposed over the substrate;

a protective film disposed over the ferroelectric polymer structure; and

a second electrode disposed over the protective film, wherein the ferroelectric polymer structure comprises:

a first crystalline ferroelectric polymer layer disposed over the substrate;

a spin-on ferroelectric polymer layer disposed over the first crystalline ferroelectric polymer layer; and

a second crystalline ferroelectric polymer layer disposed over the spin-on polymer layer.

Claim 14 (canceled)

15.(previously amended) The memory according to claim 13, wherein the spin-on ferroelectric polymer layer and the crystalline ferroelectric polymer layers are made of the same composition.

Claims 16-20 (canceled)

21.(original) A cross-point matrix polymer memory structure comprising:

a first aluminum or copper electrode disposed on a substrate;

a first refractory metal nitride or oxide protective film disposed above and on the first electrode;

a ferroelectric polymer structure disposed over the substrate and the first protective film;

a second refractory metal nitride or oxide protective film disposed over the ferroelectric polymer structure; and

a second aluminum or copper electrode disposed above and on the second refractory metal nitride protective film.

22.(original) The cross-point matrix polymer memory structure according to claim 21, wherein the ferroelectric polymer structure further comprises:

a first crystalline ferroelectric polymer layer disposed over the substrate, wherein the first crystalline ferroelectric polymer layer has a thickness in a range from about 5 Å to about 45 Å;

a spin-on ferroelectric polymer layer disposed over the first crystalline ferroelectric polymer layer, wherein the spin-on ferroelectric polymer layer has a thickness in a range from about 500 Å to about 2,000 Å;

a second crystalline ferroelectric polymer layer disposed over the spin-on polymer layer, wherein the second crystalline ferroelectric polymer layer has a thickness in a range from about 5 Å to about 45 Å; and

wherein crystallinity of the first and second crystalline ferroelectric polymer layers is in a range from about one-third to greater than about one-half.

23.(original) The cross-point matrix polymer memory structure according to claim 21, wherein the ferroelectric polymer structure further comprises:

a crystalline ferroelectric polymer layer disposed above and on the first refractory metal nitride or oxide protective film, and below and on the second refractory metal nitride or oxide protective film, wherein the crystalline ferroelectric polymer layer has a thickness in a range from about 100 Å to about 2,000 Å; and

wherein the second refractory metal nitride or oxide protective film is disposed above and on the crystalline ferroelectric polymer layer.

24.(original) The cross-point matrix polymer memory structure according to claim 21, wherein the ferroelectric polymer structure further comprises a polymer selected from $(CH_2\text{-}CF_2)_n$, $(CHF\text{-}CF_2)_n$, $(CF_2\text{-}CF_2)_n$, α-, β-, γ-, and δ-phases thereof, $(CH_2\text{-}CF_2)_n\text{-}(CHF\text{-}CF_2)_m$ copolymer, α-, β-, γ-, and δ-phases of $(CH_2\text{-}CF_2)_n\text{-}(CHF\text{-}CF_2)_m$ copolymer, and combinations thereof.

25.(original) The cross-point matrix polymer memory structure according to claim 21, wherein the ferroelectric polymer structure further comprises a copolymer selected from α-, β-, γ-, and δ-phases of $(CH_2\text{-}CF_2)_n\text{-}(CHF\text{-}CF_2)_m$ copolymer, wherein n and m equal 1, and wherein n is in a fraction range from about 0.6 to about 0.9.

26.(original) The cross-point matrix polymer memory structure according to claim 21, wherein the ferroelectric polymer structure further comprises β-phase $(CH_2\text{-}CF_2)_n$ in $(CH_2\text{-}CF_2)_n\text{-}(CHF\text{-}CF_2)_m$ copolymer, wherein n and m equal 1, and wherein n is in a fraction range from about 0.7 to about 0.8.

Claims 27-38 (canceled)

39.(previously added) A memory, comprising:

a damascene structure comprising an electrode; and

a ferroelectric polymer structure formed over the damascene structure.

40.(previously added) The memory of claim 39, wherein the ferroelectric polymer structure comprises:

a first polymer layer coupled to the damascene structure;

a second polymer layer coupled to the first polymer layer; and

a third polymer layer coupled to the second polymer layer.

41.(previously added) The memory of claim 39, wherein the damascene structure further comprises a protective layer, wherein the protective layer is between the electrode and the ferroelectric polymer structure.

42.(previously added) The memory of claim 41, wherein the protective layer comprises titanium or nitride, the electrode comprises aluminum or copper, and the ferroelectric polymer structure includes a polymer layer selected from polyvinyl and polyethylene fluorides, polyvinyl and polyethylene chlorides, polyacrylonitriles, polyamides, copolymers thereof, or combinations thereof.

43.(previously added) A method, comprising:

forming a first crystalline ferroelectric polymer layer over a substrate;

forming a spin-on ferroelectric polymer layer over the first crystalline ferroelectric polymer layer; and

forming a second crystalline ferroelectric polymer layer over the spin-on polymer layer.

44.(previously added) The method of claim 43, wherein forming the first crystalline ferroelectric polymer layer comprises Langmuir-Blodgett depositing the first crystalline ferroelectric polymer layer over the substrate and wherein forming a second crystalline ferroelectric polymer layer comprises Langmuir-Blodgett depositing the second crystalline ferroelectric polymer layer over the spin-on polymer layer.

45.(previously added) The method of claim 43, further comprising:
forming a damascene structure coupled to the first crystalline ferroelectric polymer layer, wherein the damascene structure comprises an electrode coupled to the first crystalline ferroelectric polymer layer.

46.(previously added) The method of claim 43, further comprising:

forming a protective layer coupled to the first crystalline ferroelectric polymer layer, wherein the protective layer is formed by atomic layer chemical vapor deposition of materials selected from metals, refractory metals, their alloys, their nitrides, oxides, and carbides, and combinations thereof.